Chilton's

DECEMBER 15, 1982

IRON AGE

THE MAGAZINE FOR METALWORKING MANAGEMENT

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THE CHARLOTTE OBSERVER
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A SCRAPBOOK OF BUSINESS HUMOR AMERICAN

MANUFACTURING SYSTEMS SERIES 35: A BUYER'S GUIDE TO PERSONAL COMPUTERS

IN CUTTING FLUIDS, CLEANLINESS IS A VIRTUE

TEMPER EMBRITTLEMENT: STEEL'S NAGGING VIRUS

BEST AVAILABLE COPY

VOL. 225, NO. 35

IRON AGE

DECEMBER 15, 1982

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Like 1981, 1982 won't stir any fond memories among administration officials or business leaders. Inflation was cooled, but interest rates and unemployment were fueled. *Iron Age's* cartoon collection stings the high and mighty, offering a light touch in dark times.

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METALWORKING ORDER TRENDS

Orders: Not only down again, but down even more sharply

Hopes for a fourth quarter break in the slide in new orders were dashed when October data was released by the U.S. Commerce Dept.

Orders flowing to producers of durable goods were down—again—in the opening month of the final quarter of 1982. It was a steep decline.

October orders totaled $69.9 billion, down 4.6 pct from September dollar volume. Compared to the year-ago month, orders were down about 11 pct.

Orders to metalworking industries, which make up between 85 and 90 pct of total manufactured durable goods, led in the fall. Total dollar volume for the six major metalworking industry groups that make up the table here, were down 5.2 pct from September and down 11.4 pct from the year-ago month.

The five major metalworking groups are primary metals, machinery (both electrical and nonelectrical), transportation equipment, fabricated metal products and instruments.

Orders for these products totaled $58.4 billion in October and $61.6 billion in September.

Further, October marked the 15th consecutive month in which backlogs of unfilled orders for all U.S. manufacturers showed a decrease. This has happened as shipments, declining in their own right, have still managed to stay ahead of an even lower new orders inflow.

In October orders, the big loser in metalworking was the steel industry. Orders for steel were down a whopping 13 pct from the previous month. Also, orders received by machinery industries were down by nearly 5 pct and orders for transportation equipment were down a bit more than 3 pct.

In the transportation equipment category, a large fall in orders for motor vehicles and parts was only partially offset by increases in orders for aircraft, shipbuilding and railroad equipment.

In October, inventories still loomed as a big block to any soon-at-hand pickup in orders. Stocks are still too high to trigger orders for replenishment on the part of durable goods manufacturers. In October, inventory-shipments ratios for every metalworking industry group, rose.

In short, it won't be stock rebuilding that will get business perking up in metalworking.

It will take nothing less than a pickup in new orders received to get things rolling again.

Source: U.S. Dept. of Commerce Billions of dollars, seasonally adjusted monthly total, unless otherwise noted		Latest Month or Qtr.	Previous Month or Qtr.	Same Period Year Ago
Capital Expenditures (Annual Rates)				
U.S. Industry, Total	4th Qtr.	$324.5*	$320.2	$327.8
Manufacturing, Total	4th Qtr.	122.9*	123.1	126.9
Manufacturing, Durable Goods	4th Qtr.	58.8*	60.0	60.8
Mining Industry	4th Qtr.	16.2*	15.7	16.8
Key Indicators, Durable Goods Manufacturing				
New Orders	Oct.	69.9	73.3	77.8
Shipments	Oct.	72.4	76.6	82.6
Inventories	Oct.	182.3	182.8	186.7
Unfilled Orders	Oct.	284.1	286.7	312.7
New Orders, Metalworking				
Capital Goods Producers, Nondefense Industries	Oct.	20.2	20.3	21.0
Capital Goods Producers, Defense Industries	Oct.	4.7	4.3	3.8
Primary Metals, Total	Oct.	7.0	8.0	10.2
Steel (SIC 331)	Oct.	2.8	3.4	5.1
Iron & Steel Castings (SIC 332)	Oct.	0.6	0.6	1.2
Nonferrous Metals	Oct.	3.6	4.0	3.9
Nonelectrical Mach.-Equip. Industries, Total	Oct.	13.8	14.0	16.0
Engines & Turbines	Oct.	1.2	0.9	1.4
Farm Machinery & Equipment (Shipments)	Oct.	1.0	1.0	1.2
Construction, Mining & Materials Hdlg. Equip.	Oct.	2.1	2.5	3.1
General Industrial Machinery	Oct.	1.0	1.1	1.6
Fluid Power Equipment** (Index-1972=100)	Oct.	150	165	265
Metalworking Machinery	Oct.	0.6	0.6	0.8
Machine Tools, Total (Millions $, unadjusted)***	Oct.	119.2	86.9	216.5
Machine Tools, Metal-Cutting***	Oct.	72.9	52.6	157.1
Machine Tools, Metal-Forming***	Oct.	46.3	34.3	59.4
Electrical Mach. & Equip. Industries, Total	Oct.	11.0	12.0	10.4
Elec. Transmission Equip. & Industrial Apparatus	Oct.	1.5	1.6	1.5
Household Appliances	Oct.	1.0	1.1	0.9
Communication Equipment	Oct.	3.7	4.6	3.0
Transportation Equip. Industrial, Total	Oct.	14.4	14.8	15.6
Motor Vehicles & Parts (Shipments)	Oct.	7.9	9.6	10.7
Aircraft, Missiles & Parts	Oct.	5.2	4.2	3.4
Shipbuilding & Military Tanks	Oct.	0.7	0.4	0.8
Fabricated Metal Products, Total	Oct.	8.4	8.7	9.3
Instruments, Total	Oct.	3.8	4.1	4.2

*Est.—Commerce Dept.; **Source: National Fluid Power Assn.; ***Source: NMTBA.

GUIDELINES FOR BUYING A PERSONAL COMPUTER

Personal computers will outsell mainframe computers in a few years. But it takes some definition of goals to hone in on the right one.

By Alice M. Greene

The most surprising fact about personal computers is that most of those sold are not used as personal computers. Although shipments of personal computers will pass the one million mark in 1982, the vast majority of these computers, 54 pct according to International Data Corp. (IDC) will be used in business/professional applications.

The personal computer brings computing power to individuals, for sure, and more of them are cropping up in private homes. But, the business/professional market has been and will continue to be the largest and fastest growing market for desktop computers.

"The desktop computer will become a status symbol at larger companies for many executives," says the Framingham, Mass. based research firm. "At the smaller firm, the availability of a low cost computer with sophisticated capabilities will be met enthusiastically."

The home/hobby market is only now becoming a reality. "The huge home market encompasses more than 80 million homes in the U.S. The forecasted installed base covers less than 10 pct of this," says IDC.

"The real impetus for growth will come from parents who don't want their children left behind; as nearly all schools at all levels start having computers, children will push to get them in the home."

Already many colleges and universities require that an entering student have a personal computer, just as these schools required a slide rule or a calculator in years past.

The educational and scientific markets for personal computers are shrinking by comparison with the business and home markets, but are still important for personal computer manufacturers.

What all this adds up to is very distinct sets of criteria from which to choose the "best" computer.

What characteristics are universal, which suit the home market, and which are most important for the small business or professional user? The size of the computer system or the eventual size of the system may vary depending on where it will be used, but a lot of the same reasoning applies.

The most basic decision is to know what you are going to do with the computer once you get it. If you plan to use it in business, determine what is your most important application, then look at potential computer purchases with a view as to how they handle that application.

At home, also, it is best not to buy a computer "just to own a personal computer." Computer literacy may not be enough reason for a substantial investment. Computer games can be played on far less expensive equipment than a serious personal computer. If the children's education is the goal, make sure you look for a computer with a lot of educational software.

Once you have decided what your computer will do, look for software that will solve your problem. Even personal computer manufacturers, Digital Equipment Corp. among them, suggest that a buyer choose software before hardware.

All computer novices, amateur or professional, want to write their own software. But to be practical, it is best to buy something you know works, that you can see demonstrated. Using packaged applications software gets a job done faster and with more accuracy. It also helps build the computer literacy which makes subsequent personal programming simpler.

Applications programs are being churned out all over the country and the world for almost every conceivable application. But, applications programs must be compatible with the systems software of the computer, that is, the software that is resident in the machine which makes the computer actually run.

These operating systems vary from one personal computer vendor to another, although some more popular versions are increasing in dominance. Some, such as CP/M, UNIX and MS/DOS are used by several computer vendors. They were developed

(Cont. on p. 52)

The IBM Personal Computer can generate and display charts, graphs, text and numerical information. The system can accommodate both office and home applications.

(Cont. from p. 49)

by research-type companies as general purpose operating systems. Other operating systems were developed by personal computer manufacturers and are proprietary for their own products. Radio Shack, a division of Tandy Corp., uses TRSDOS, and Apple Computer Inc. uses Apple DOS.

There are benefits to both approaches. Software written for more generic operating systems is more transportable to other systems. On the other hand, customized software should fit a particular computer better.

If as some predict, some of the new personal computer companies fail to survive, users locked into one computer/one operating system may find themselves in a predicament.

And the future must be very much in the mind of a prospective user or buyer of a personal computer. Once a computer is installed, applications multiply. There is always more to do. Most of the leading personal computers today offer a lot of applications software already. And much third party software is being written for these same market leaders.

It is hard to believe, for example, that there is any application one can imagine that isn't now available or currently being planned for the new personal computer line from International Business Machines (IBM).

Much the same is true for Digital Equipment, Apple, Radio Shack, Commodore and the other leading vendors. Others may be more specialized.

What is important is to pick a computer which will have the capability needed not just at the time of purchase, but a few years out. This is true as much for a computer for truly home use as for a personal computer used in a business office.

Size is part of future capability; and size is a hardware function. Size can be thought of as processing capability and storage capability. Earlier introductions were 8-bit systems which could address 64 kilobytes of RAM (random access memory) memory. Later, the 16-bit versions were introduced with more directly addressable memory.

Today, 32-bit models are being introduced. Hewlett-Packard has recently introduced a family of 32-bit computers which the company claims are low enough in price to allow individual scientists and engineers have their own personal mainframes. Intended primarily for computer-aided engineering applications, the HP-900 family features networking, a choice of operating systems and triple CPUs (central processing units), at prices that range from $28,250 to $64,565.

This size system is obviously not intended to manage the family budget, but it does indicate the trend toward providing personal computer capability for an ever growing range users.

Eventually, there will be many independent data sources available to personal computer users. Some exist already. It is possible to tie into financial data bases to get current stock market activity reports today. This area has just begun. Data will be available to individual users over phone lines; for individuals working in a corporate environment, internal corporate networks will bring data to individuals.

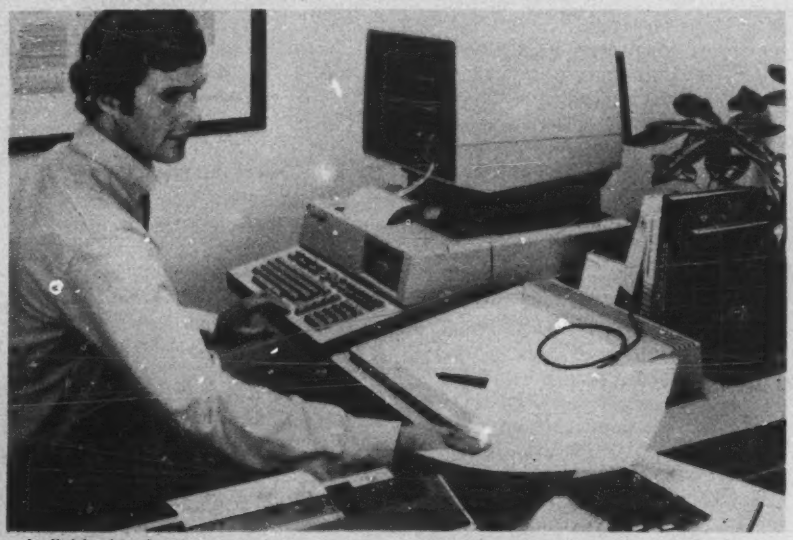
Electronic mail, word processing—a lot of individual needs will be made available to individuals working at their own computer through company communications schemes.

In fact, the use of personal computers by individuals at companies where they are employed has created some problems for those companies. Until recently, only large mainframe computers and minicomputers fell within the realm of most Management Information Systems (MIS) departments.

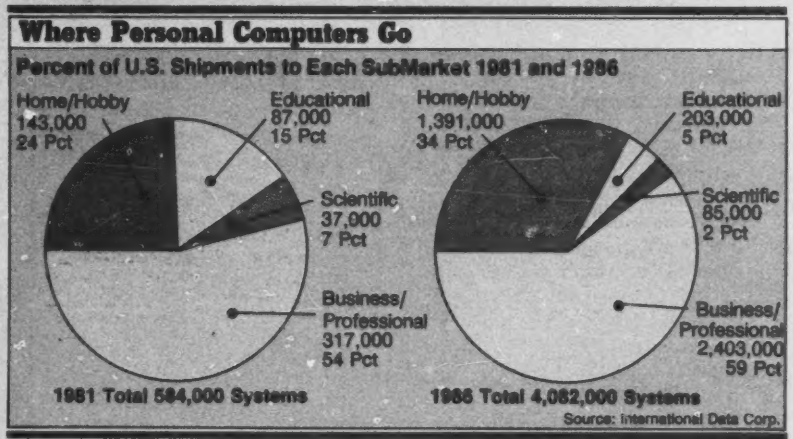
Today, "the prospect of thousands of personal computers within large user organizations is not unimaginable," claims Aaron Goldberg, senior research analyst for the desktop/personal computer market for International Data Corp. "If left to itself, the growth and proliferation of personal computers could well become an unmanageable nightmare for the MIS department.

"Most organizations have not developed a firm plan for personal computer usage. However, the time is ripe if the MIS department wants to get a handle on the problem before the installed population makes any attempt at control impossible."

This integration by companies of the personal computer phenomenon becomes even more critical if, as IDC projects, desktop/personal computer shipments will exceed mainframe shipment values by 1986.



Individual scientists can have their own 32-bit computer from Hewlett-Packard.



Getting back to an individual's decision, after considering software, hardware, future requirements for expansion, for networking at home or in the office, prospective users should give some thought to service, reliability, training.

An IBM spokesperson sums up the decisions to be made: "In selecting a personal computer, as in choosing any type of computer, a major consideration is what the individual wants to be accomplish. With that in mind, the availability of software enters the picture. From that the user must assess the hardware capabilities and functions required to run that software.

"The user should always anticipate future needs and interests; thus the desirability of expansion and upgrade capabilities.

"Finally, there is the matter of price, service availability, the overall technical quality of both hardware and software, and quite often the 'user-friendliness' of a particular system," he concludes.

Whatever personal computing needs exist, there are a host of products waiting to fill those needs.

At the low end of the spectrum, the new ZX81 from Sinclair Research brings computing power to an individual for under $100. Sinclair technology is also available in Timex/Sinclair computers under a license from Sinclair.

Going up in price a bit, the under $500 range offers the Commodore VIC-20, Atari 400, TI 99/4A from Texas Instruments and the TRS-80 Color Computer.

Prices vary, of course, depending on the size of the system. Most can be expanded for more storage capacity with the addition of disk capacity. Peripherals add to both the price and the useability of systems for many users.

Video displays vary from a home television set to screens that draw graphs. Data storage and printing capability also varies in price and sophistication. Digital Equipment Corp. offers a five-million byte Winchester Disk Drive with an integral controller that can store the "equivalent of 2500 typewritten pages," according to the company.

The more sophisticated options suit the more sophisticated needs of professional/business offices. The larger companies that have entered the personal computer market seem to aim their products at this market segment. These computer giants, IBM, Sperry Univac, Hewlett-Packard, Digital Equipment Corp. have products which span the market from the individual professional working in his or her home to a similar individual working for a corporation in a network with other personal computer users.

When IBM announced its personal computer, C. B. Rogers, Jr., vice president and group executive, General Business Group, said, "This is the computer for just about everyone who has ever wanted a personal system at the office, on the university campus or at home."

The IBM Personal Computer can be tailored to fit an individual's needs, but the thrust of the system is the middle to high end of the market. A basic system with color graphics for home use attached to an audio tape cassette player and a television set would sell for approximately $1565, in IBM Product Centers. A more typical system for home or school with color graphics, a memory of 64,000 bytes, a single diskette drive and the IBM Disk Operating System would be priced at $2665. An expanded system for business with two diskette drives, an IBM display and a printer would cost $4425, according to the company.

Digital Equipment Corp. (DEC) announced three models which "set new and higher standards for personal computing," according to DEC president Ken Olsen. The company's three personal computers cover a range of applications. The Rainbow 100, the DECmate II, and the Professional 300 series range in sophistication and price from under $3500 to about $5000.

"We have a personal computer that runs both 8- and 16-bit CP/M applications interchangeably. We have a personal computer optimized for office management. And we have introduced a series of personal computers with a proprietary architecture that's highly compatible with our larger PDP-11 and VAX systems," according to the company.

"This new personal computer architecture provides the basis for exciting new applications in graphics, in telephone management, and in local area networking and distributed processing."

These advanced features make it clear that a major thrust for these computers is in a business office. Newer office environments need to provide personal computing features, whether these be word processing or file management or engineering calculations.

Hewlett-Packard has a whole family of what is called personal office computers. The HP Series 100 computers are aimed at and customized for professional office applications, including word processing, decision support, presentation graphics, programming and small-business accounting.

These systems function both as stand-alone computers and as intelligent teminals to larger computer systems and networks.

And the HP 120 is transportable for occasional use at home.

Hewlett-Packard has also introduced a personal technical computer, the HP Series 200, Model 16, a 16-bit computer designed for scientists and engineers, according to P. R. Welch, marketing manager for HP's Desktop Computer Div.

Numerous HP applications-software packs are available for the Model 16. These include computer-aided engineering tools such as ac circuit analysis, and digital filter design, mathematics modules and business aids.

In 1982, there will be $12 billion spent on personal computers, according to International Data Corp. This staggering success in a year that had few economic successes to brag about has resulted in a number of new business ventures. The prospective buyer must choose carefully between them. □

Metalworking's Manufacturing System: 35

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Software: Making It Less Costly and More Available, Nov. 23, pp. 76-90

CAD/CAM Systems Explode In Metalworking, Dec. 28, pp. 48-51

In 1982:

Training the Next Generation of Manufacturers, Jan. 22, pp. 62-65

Data Communications: Vital Link in a Manufacturing System, Feb. 19, pp. 75-79

Robots Extend a Helping Hand, March 19, pp. 59-83

PCs Provide Shop Floor Control With Boardroom Impact, April 23, pp. 94-96

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The Emerging Worldwide NC Race, June 25, pp. 59-64

Are Superminis Challenging The Mainframe Computers, July 23, pp. 57-65

Now, It Can Be Tested on The Terminal, Aug. 20, pp. 109-112

Is It Time for a New Approach to NC Programming?, Sept. 24, pp. 83-89

Are Factory Systems the Path to Productivity?, Oct. 22, pp. 41-48

Will Turnkey CAD/CAM Systems Remain Viable?, Nov. 19, pp. 49-56

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EFFECTIVE NOVEMBER 15, 1982

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	160	156	116	236
Buffalo	31	30	30	60
Pittsburgh	137	126	137	284
Youngstown	56	68	67	124
Cleveland	65	81	95	109
Detroit	98	92	103	106
Chicago	322	326	333	513
Cincinnati	64	63	64	91
St. Louis	54	52	55	75
Southern	70	69	61	196
Western	49	48	50	128
U.S. Production	1,106	1,111	1,111	1,922

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)..... gross-ton 80.50-86.9*
Old range, non-bessemer ..... gross-ton $32.78
Mesabi, regular-unscreened ..... gross-ton $32.53
Mesabi, non-bessemer.....gross-ton $32.25-32.53**

*80.50¢—Pickands Mather as of 1/27/81.
**86.9¢—U. S. Steel as of 3/15/82. Cleveland-Cliffs as of 2/26/82, Oglebay Norton as of 3/25/82, and Hanna Mining as of 2/26/82.

Steel Production, Composite Prices

(Effective November 15, 1982)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1982	To Date 1981
Net tons, in thousands	1,106	1,111	65,479	107,255
Capability Utilization Rate	37.4	37.6	49.0	80.0

Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/4/82)	25.297	25.297	25.297	25.195
Pig Iron** (Net ton=2000 lbs.)	$213.00	$213.00	$213.00	$203.00
Scrap No. 1 hvy.*** (Gross ton=2240 lbs.)	$ 51.17	$ 51.17	$ 52.17	$ 75.83
No. 2 bundles	$ 38.83	$ 38.83	$ 39.17	$ 53.83

Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh	$ 52.50	$ 52.50	$ 54.50	$85.50
No. 1 steel, Philadelphia	54.50	54.50	55.50	66.50
No. 1 steel, Chicago	46.50	46.50	46.50	75.50
No. 1 bundles, Detroit	41.50	41.50	44.50	73.50
Low Phos., Youngstown	52.50	52.50	56.50	85.50
No. 1 mach'y cast., Pgh	64.50	64.50	64.50	93.50
No. 1 mach'y cast., Phila	98.50	98.50	98.50	111.50
No. 1 mach'y cast., Chi.	103.50	103.50	103.50	117.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.

**Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.

***Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective November 15, 1982)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	76.00-80.00	1/4/82
Copper (C)	68.00	68.00-70.00	11/12/82
Lead	21.50-26.00	22.00-26.00	11/12/82
Magnesium Ingot	134.00	125.00	6/1/81
Nickel	329.00	350.00	11/25/81
Titanium Sponge	555.00-585.00	555.00	4/29/82
Zinc	38.00-42.00	40.00-42.00	11/9/82

ALUMINUM: 99.5%. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: electro., Port Colborne, Canada. ZINC: high grade.

Antimony, American Laredo, Texas . $2.00
Beryllium-aluminum 5% Be, per lb. contained Be.....$201.00
Beryllium-copper, per lb. cont. Be $121.00
Beryllium 97% powder 200.....$166.00
Bismuth, ton lots .....$1.35-$1.45
Cadmium, under one ton .....$1.05-$1.15
Calcium, ton lots, crown $3.05
Chromium, 99.8%.....$3.75
Cobalt, 99%, cathode.....$12.50
Gold per troy oz. $403.20
Indium, dollars per troy oz.....$2.85-$4.00
Iridium, dollars per troy oz.....$600
Magnesium sticks, 10,000 lbs. $1.91
Mercury, per 76-lb. f.o.b. N.Y. ..$365-$385
Molybdenum, lb. tech. moly oxides, 20 lb. MO can .....$6.85-$8.50
Nickel oxide sinter at U.S. points of entry $3.12
Palladium, per troy oz. $140
Platinum, per troy oz. $475
Rhodium, per troy oz. $600.00
Silver ingots, per troy oz.....$9.35
Vanadium $4.94
Zirconium sponge.....$12.00-$17.00
(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Nov. 8—559.04 Nov. 11—561.69
Nov. 9—559.44 Nov. 12—558.25
Nov. 10—561.69

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs. add 1¢ per lb)

	Solids	Turning
Copper	67½	58¼
Yellow brass	59¼	54⅛
Red brass	63	56½
Comm. bronze	64	57
Mang. bronze	58⅞	57⅛
Free cutting rod ends	44	43

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	55
No. 2 copper wire	49
Light copper	40

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	51
No. 2 copper wire	45
Light copper	36
No. 1 composition	50
No. 1 comp. turnings	47
Hvy. yellow brass solids	33
Hvy. yellow brass turnings	26
Radiators	41

Aluminum

New mixed clips	24	—25
Old sheet	23	—24
Old cast	23	—24
Clean dry borings	23	—24

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	23	—24
Mixed L.C. clips	21	—22
Old sheets and cast	15	—16
Borings and turnings	12	—13
Duraluminum clippings	22	—23

Copper and Brass

No. 1 copper wire	45	—46
No. 2 copper wire	38	—39
Light copper	33	—34
Radiators	32	—33
No. 1 composition	41	—42
No. 1 composition turn'gs	39	—40
Cocks and faucets	28	—29
Clean heavy yellow brass	25	—26
Brass Pipe	28	—29
New soft brass clippings	35	—36

Lead

Heavy soft lead	10	—11
Whole batteries	5	— 6
Type metal	15	—16
Electrotype	19	—20

Nickel

Nickel solids	110	—115
Nickel rod ends	110	—115
Nickel sheets, clips	110	—115
Nickel turnings	50	— 55

Zinc

New zinc clippings	14	—15
Old diecast zinc	7	— 8

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EFFECTIVE NOVEMBER 15, 1982

MATERIALS NEWSFRONT

(Effective November 15, 1982) Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated. Prices are the opinions of *Iron Age* editors and correspondents, based on contacts with dealers, brokers, generators and users in the industry on the effective date listed above.

Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 52.00 to	$ 53.00
No. 2 hvy. melting	45.00 to	46.00
No. 1 dealer bundles	65.00 to	66.00
No. 1 factory bundles (auto)	60.00 to	61.00
No. 2 bundles	38.00 to	39.00
No. 1 busheling	60.00 to	61.00
Machine shop turn.	6.00 to	7.00
Shoveling turnings	20.00 to	21.00
Cast iron borings	18.00 to	19.00
Low phos. punchings plate	67.00 to	68.00
Heavy turnings	45.00 to	46.00
No. 1 RR hvy. melting	65.00 to	66.00
Rails 2 ft. and under	80.00 to	81.00
Scrap rails, random lgth.	78.00 to	79.00
RR specialties	71.00 to	72.00
No. 1 machinery cast	64.00 to	65.00
Cupola cast	57.00 to	58.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	490.00 to	500.00
18-8 turnings	390.00 to	400.00

Chicago

No. 1 hvy. melting	$ 46.00 to	$ 47.00
No. 2 hvy. melting	42.00 to	43.00
No. 1 dealer bundles	55.00 to	56.00
No. 1 factory bundles (auto)	59.00 to	60.00
No. 2 dealer bundles	38.00 to	39.00
No. 1 busheling	56.00 to	57.00
Shredder scrap	55.00 to	56.00
Machine shop turn.	14.00 to	15.00
Mixed bor. and turn.	15.00 to	16.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	33.00 to	34.00
Low phos. forge crop	76.00 to	77.00
Low phos. punchings plate ¼ in. and heavier	79.00 to	80.00
Low phos. 2 ft. and under	74.00 to	75.00
No. 1 RR hvy. melting	48.00 to	49.00
Scrap rails, random lgth	49.00 to	50.00
Reroller rails	85.00 to	86.00
Rails, 2 ft. and under	76.00 to	77.00
RR couplers and knuckles	69.00 to	70.00
RR car axles	102.00 to	103.00
No. 1 machinery cast	103.00 to	104.00
Cupola cast	89.00 to	90.00
Stove plate	76.00 to	77.00
Steel car wheels	59.00 to	60.00
Stainless		
18-8 bundles and solids	440.00 to	450.00
18-8 turnings	340.00 to	350.00
430 bundles and solids	95.00 to	100.00
430 turnings	65.00 to	70.00

Philadelphia

No. 1 hvy. melting	$ 53.00 to	$ 56.00
No. 2 hvy. melting	48.00 to	51.00
No. 1 dealer bundles	65.00 to	68.00
No. 2 dealer bundles	38.00 to	41.00
No. 1 busheling	65.00 to	68.00
Shredder scrap	71.00 to	74.00
Machine shop turn.	18.00 to	21.00
Mixed bor. and turn.	18.00 to	21.00
Shoveling turnings	30.00 to	33.00
Clean cast chemical borings	40.00 to	43.00
Low phos. 5 ft. and under	60.00 to	63.00
Low phos. 2 ft. punchings	85.00 to	88.00
Electric furnace bundles	75.00 to	78.00
RR specialties	74.00 to	77.00
Rails, 2 ft. and under	89.00 to	92.00
Cupola cast	55.00 to	58.00
Heavy breakable cast	53.00 to	56.00
No. 1 machinery cast	97.00 to	100.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 36.00 to	$ 37.00
No. 2 hvy. melting	34.00 to	35.00
No. 1 dealer bundles	41.00 to	42.00
No. 2 bundles	18.00 to	19.00
No. 1 busheling	40.00 to	41.00
Drop forge flashings	21.00 to	22.00
Machine shop turn.	14.00 to	15.00
Mixed borings and turn.	7.00 to	8.00
Shoveling turnings	14.00 to	15.00
Cast iron borings	5.00 to	6.00
Heavy breakable cast	24.00 to	25.00
Mixed cupola cast	40.00 to	41.00
Automobile cast	58.00 to	59.00
Stainless		
18-8 bundles and solids	395.00 to	405.00
18-8 turnings	285.00 to	295.00
430 bundles and solids	70.00 to	80.00

Youngstown

No. 1 hvy. melting	$ 45.00 to	$ 46.00
No. 2 hvy. melting	30.00 to	31.00
No. 1 dealer bundles	51.00 to	52.00
No. 2 dealer bundles	30.00 to	31.00
Machine shop turn.	2.00 to	3.00
Shoveling turnings	8.00 to	9.00
Low phos. plate	52.00 to	53.00
Electric furnace bundles	52.00 to	53.00
Galvanized bundles	42.00 to	43.00

Cleveland

No. 1 hvy. melting	$ 42.00 to	$ 43.00
No. 2 hvy. melting	24.00 to	25.00
No. 1 dealer bundles	46.00 to	47.00
No. 1 factory bundles	51.00 to	52.00
No. 2 bundles	22.00 to	23.00
No. 1 busheling	47.00 to	48.00
Machine shop turn.	2.00 to	3.00
Mixed bor. and turn.	2.00 to	3.00
Shoveling turnings	5.00 to	6.00
Cast iron borings	5.00 to	6.00
Cut structural & plates, 2 ft. and under	70.00 to	71.00
Low phos. punchings plate	70.00 to	71.00
Drop forge flashings	33.00 to	34.00
Foundry steel, 2 ft. & under	59.00 to	60.00
No. 1 RR hvy melting	63.00 to	64.00
Rails, 2 ft. and under	82.00 to	83.00
Rails, 18 in. and under	83.00 to	84.00
Steel axle turnings	69.00 to	70.00
Railroad cast	82.00 to	83.00
No. 1 machinery cast	82.00 to	83.00
Cupola cast	82.00 to	83.00
Stove plate	57.00 to	58.00
Stainless		
18-8 bundles	375.00 to	385.00
18-8 turnings	295.00 to	305.00
430 bundles	75.00 to	85.00

Buffalo

No. 1 hvy. melting	$ 25.00 to	$ 26.00
No. 2 hvy. melting	15.00 to	16.00
No. 1 busheling	32.00 to	33.00
No. 1 dealer bundles	30.00 to	31.00
No. 2 bundles	12.00 to	13.00
Machine shop turn.	1.00 to	2.00
Mixed bor. and turn.	8.00 to	9.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	8.00 to	9.00
Low phos. plate	52.00 to	53.00
Structural and plate, 2 ft. and under	50.00 to	51.00
Rails, 2 ft. and under	42.00 to	43.00
Scrap rails, random lgth.	22.00 to	23.00
No. 1 machinery cast	65.00 to	66.00
No. 1 cupola cast	44.00 to	45.00

St. Louis

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	39.00 to	40.00
Foundry steel, 2 ft.	39.00 to	40.00
No. 1 dealer bundles	47.00 to	48.00
No. 2 bundles	36.00 to	37.00
Machine shop turn.	12.00 to	13.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	30.00 to	31.00
No. 1 RR hvy. melting	47.00 to	48.00
Rails, random length	49.00 to	50.00
Rails, 18 in. and under	64.00 to	65.00
RR specialties	80.00 to	81.00
Cupola cast	70.00 to	71.00
Heavy breakable cast	48.00 to	49.00
Stove plate	70.00 to	71.00
Cast iron car wheels	49.00 to	50.00
Rerolling rails	84.00 to	85.00
Unstripped motor blocks	55.00 to	56.00

Birmingham

No. 1 heavy melting	$ 56.00 to	$ 57.00
No. 2 heavy melting	53.00 to	54.00
No. 1 dealer bundles	56.00 to	57.00
No. 2 bundles	43.00 to	44.00
No. 1 busheling	53.00 to	54.00
Shredder scrap	72.00 to	73.00
Machine shop. turn.	20.00 to	21.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	26.00 to	27.00
Electric furnace bundles	52.00 to	53.00
Elec. furnace, 3 ft. & under	52.00 to	53.00
Structural and plate, 2 ft.	71.00 to	72.00
Structural and plate, 4 ft.	65.00 to	66.00
No. 1 RR hvy. melting	54.00 to	55.00
Scrap rails, random lgth.	59.00 to	60.00
Rails, 18 in. and under	74.00 to	75.00
Angles and splice bars	65.00 to	66.00
No. 1 cupola cast	76.00 to	77.00
Unstripped motor blocks	55.00 to	56.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 28.00 to	$ 29.00
No. 2 hvy. melting	27.00 to	28.00
No. 1 dealer bundles	29.00 to	30.00
No. 2 bundles	18.00 to	19.00
Machine shop turn.	1.00 to	2.00
Shoveling turnings	3.00 to	4.00
Cast iron borings	4.00 to	5.00
Low phos. 18 in. and under	53.00 to	54.00
Rails, random length	35.00 to	36.00
Rails, 2 ft. and under	61.00 to	62.00
No. 1 cupola cast	44.00 to	45.00
Heavy breakable cast	20.00 to	21.00
Drop broken cast	59.00 to	60.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 26.00 to	$ 27.00
No. 2 hvy. melting	22.00 to	24.00
No. 2 dealer bundles	22.00 to	23.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	4.00 to	5.00
Shoveling turnings	10.00 to	12.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	89.00 to	90.00
Mixed yard cast	38.00 to	39.00
Heavy breakable cast	14.00 to	15.00
Stainless		
18-8 prepared solids	400.00 to	425.00
18-8 turnings	350.00 to	375.00
430 prepared solids	90.00 to	100.00
410 solids	80.00 to	90.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 28.00 to	$ 30.00
No. 2 hvy. melting	20.00 to	22.00
No. 1 dealer bundles	28.00 to	30.00
No. 2 bundles	16.00 to	18.00
No. 1 busheling	28.00 to	30.00
Shredder scrap	38.00 to	40.00
Machine shop turn.	1.00 to	2.00
Shoveling turnings	1.00 to	2.00
No. 1 machinery cast	100.00 to	105.00
Mixed cupola cast	23.00 to	25.00
Heavy breakable cast	4.00 to	6.00

San Francisco

No. 1 hvy. melting	$ 39.00 to	$ 41.00
No. 2 hvy. melting	31.00 to	33.00
No. 1 dealer bundles	26.00 to	28.00
No. 2 dealer bundles	11.00 to	13.00
Machine shop turn.	4.00 to	6.00
Cast iron borings	4.00 to	6.00
No. 1 cupola cast	83.00 to	85.00

Los Angeles

No. 1 hvy. melting	$ 38.00 to	$ 40.00
No. 2 hvy. melting	27.00 to	29.00
No. 1 dealer bundles	25.00 to	27.00
No. 2 dealer bundles	8.00 to	10.00
Machine shop turn.	4.00 to	6.00
Shoveling turnings	8.00 to	10.00
Cast iron borings	4.00 to	6.00
Elec. furnace, 1 ft. and under (foundry)	84.00 to	86.00
No. 1 cupola cast	86.00 to	88.00

Seattle

No. 1 hvy. melting	$ 53.00 to	$ 55.00
No. 2 hvy. melting	42.00 to	44.00
No. 2 bundles	32.00 to	34.00
No. 1 cupola cast	88.00 to	90.00
Mixed yard cast	78.00 to	80.00

Hamilton, Ont.

Brokers buying price per net ton on cars:

No. 1 heavy melting	$ 33.00
No. 2 heavy melting cut 2 ft. and under	30.00
No. 1 dealer bundles	40.00
No. 2 bundles	5.00
Mixed steel scrap	17.00
Bush. new fact. prep'd.	38.00
Bush. new fact. unprp'd.	30.00
Machine shop turn.	18.00
Short steel turn.	21.00
Mixed bor. and turn.	10.00
Cast scrap	30.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	43.00 to	44.00
No. 2 bundles	28.00 to	30.00
Machine shop turn.	8.00 to	9.00
Crushed turnings	22.00 to	24.00
Shredder scrap	55.00 to	56.00
Cut structural plate 2 ft. and under	77.00 to	78.00
Unstripped motor blocks	55.00 to	57.00
Cupola cast	64.00 to	66.00

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EFFECTIVE NOVEMBER 22, 1982

MATERIALS NEWSFRONT

Price & Production Data

Steel production by districts, thousands of tons (000 omitted)

	Last Week	Two Weeks Ago	Month Ago	Year Ago
North East Coast	149	160	141	201
Buffalo	29	31	30	58
Pittsburgh	139	137	115	310
Youngstown	53	56	50	132
Cleveland	64	65	83	98
Detroit	105	98	96	107
Chicago	297	322	337	491
Cincinnati	57	64	69	95
St. Louis	56	54	52	85
Southern	59	70	68	200
Western	47	49	48	126
U.S. Production	1,055	1,106	1,089	1,903

Source: American Iron & Steel Institute

Lake Superior Ore Prices

51.50% Fe Natural delivered lower Lake ports. Rail transportation, handling and unloading may be charged to the account of the buyer. Coarse ore 80¢ premium.

Pellets (per iron unit natural)..... gross-ton 80.50-86.9*
Old range, non-bessemer ..... gross-ton $32.78
Mesabi, regular-unscreened ..... gross-ton $32.53
Mesabi, non-bessemer.....gross-ton $32.25-32.53**

*80.50¢—Pickands Mather as of 1/27/81.
**86.9¢—U. S. Steel as of 3/15/82. Cleveland-Cliffs as of 2/26/82, Oglebay Norton as of 3/25/82, and Hanna Mining as of 2/26/82.

Steel Production, Composite Prices

(Effective November 22, 1982)

U.S. Steel Production	Last Week	Two Weeks Ago	To Date 1982	To Date 1981
Net tons, in thousands	1,055	1,106	66,746	109,122
Capability Utilization Rate	35.7	37.4	48.8	79.6
Composite Prices	This Week	Week Ago	Month Ago	Year Ago
Finished Steel Base* (¢/lb.—eff. 4/4/82)	25.297	25.297	25.297	25.195
Pig Iron* * (Net ton = 2000 lbs.)	$213.00	$213.00	$213.00	$203.00
Scrap No. 1 hvy.* * * (Gross ton = 2240 lbs.)	$ 51.17	$ 51.17	$ 51.50	$ 75.83
No. 2 bundles	$ 38.50	$ 38.83	$ 38.83	$ 53.83
Scrap Comparison (Gross Ton)				
No. 1 steel, Pittsburgh ..	$ 52.50	$ 52.50	$ 52.50	$85.50
No. 1 steel, Philadelphia	54.50	54.50	55.50	66.50
No. 1 steel, Chicago.....	46.50	46.50	46.50	75.50
No. 1 bundles, Detroit...	41.50	41.50	41.50	73.50
Low Phos., Youngstown	52.50	52.50	52.50	85.50
No. 1 mach'y cast., Pgh	64.50	64.50	64.50	93.50
No. 1 mach'y cast., Phila	98.50	98.50	98.50	111.50
No. 1 mach'y cast., Chi.	103.50	103.50	103.50	117.50

*Finished Steel Composite
Weighted index of steel bars, shapes, plates, wire, rails, black pipe, hot and cold rolled sheets and strips.
* *Pig Iron Composite
Based on average prices for basic and foundry pig iron at representative producing points within the U.S.
* * *Steel Scrap Composite
Average of No. 1 hvy. melting steel scrap and No. 2 bundles delivered to consumers at Pittsburgh, Philadelphia and Chicago.

Nonferrous Prices

(Effective November 22, 1982)
Prices obtained in trade based on representative tonnages per gross ton delivered to consumer unless otherwise stated.

Primary Metal Prices

(cents per lb.)	current price	last price	date of change
Aluminum	76.00	76.00-80.00	1/4/82
Copper (C)	68.00	68.00-70.00	11/12/82
Lead	20.50-26.00	21.50-26.00	11/19/82
Magnesium Ingot	134.00	125.00	6/1/81
Nickel	329.00	350.00	11/25/81
Titanium Sponge	555.00-585.00	555.00	4/29/82
Zinc	38.00-42.00	40.00-42.00	11/9/82

ALUMINUM: 99.5%. COPPER (C) = cathode. LEAD: common grade. MAGNESIUM: 99.8% pig. Velasco, Tex. NICKEL: electro., Port Colborne, Canada. ZINC: high grade.

Antimony, American Laredo, Texas . $2.00
Beryllium-aluminum 5% Be, per lb. contained Be $201.00
Beryllium-copper, per lb. cont. Be $121.00
Beryllium 97% powder 200 ..... $166.00
Bismuth, ton lots ..... $1.35-$1.45
Cadmium, under one ton ..... $1.05-$1.15
Calcium, ton lots, crown $3.05
Chromium, 99.8% $3.75
Cobalt, 99%, cathode $12.50
Gold per troy oz. $410.50
Indium, dollars per troy oz..... $2.85-$4.00
Iridium, dollars per troy oz..... $600
Magnesium sticks, 10,000 lbs. $1.91
Mercury, per 76-lb. f.o.b. N.Y. .. $365-$385
Molybdenum, lb. tech. moly oxides, 20 lb. MO can $5.85
Nickel oxide sinter at U.S. points of entry $3.12
Palladium, per troy oz. $140
Platinum, per troy oz. $475
Rhodium, per troy oz. $600.00
Silver ingots, per troy oz..... $9.88
Vanadium $4.94
Zirconium sponge..... $12.00-$17.00
(Per lb. unless otherwise noted)

Straits Tin Price

(U.S. cents per lb, EX-SMELTER, based on daily market in Penang in Malaysian dollars per kilo.)

Nov. 15—Holiday
Nov. 16—558.91
Nov. 17—559.31
Nov. 18—559.17
Nov. 19—560.23

Scrap Prices

Brass Mill Scrap

(Cents per lb; over 20,000 lbs. add 1¢ per lb)

	Solids	Turning
Copper	66⅛	56¼
Yellow brass	57⅞	52¾
Red brass	61¼	54¾
Comm. bronze	62¼	55¼
Mang. bronze	57¾	56
Free cutting rod ends	44	43

Custom Smelters Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	55
No. 2 copper wire	49
Light copper	39

Ingot Makers Scrap

(Cents per lb., carload lots, del. refinery)

No. 1 copper wire	51
No. 2 copper wire	45
Light copper	35
No. 1 composition	50
No. 1 comp. turnings	47
Hvy. yellow brass solids	33
Hvy. yellow brass turnings	26
Radiators	41

Aluminum

New mixed clips	24	—25
Old sheet	23	—24
Old cast	23	—24
Clean dry borings	23	—24

Dealers' Scrap

(Dealers' buying price f.o.b. New York in cents per pound)

Aluminum

Segregated clippings	22	—23
Mixed L.C. clips	20	—21
Old sheets and cast	14	—15
Borings and turnings	11	—12
Duraluminum clippings	21	—22

Copper and Brass

No. 1 copper wire	45	—46
No. 2 copper wire	38	—39
Light copper	33	—34
Radiators	32	—33
No. 1 composition	41	—42
No. 1 composition turn'gs	39	—40
Cocks and faucets	28	—29
Clean heavy yellow brass	25	—26
Brass Pipe	28	—29
New soft brass clippings	35	—36

Lead

Heavy soft lead	10	—11
Whole batteries	5	— 6
Type metal	15	—16
Electrotype	18	—19

Nickel

Nickel solids	110	—115
Nickel rod ends	110	—115
Nickel sheets, clips	110	—115
Nickel turnings	50	— 55

Zinc

New zinc clippings	14	—15
Old diecast zinc	7	— 8

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Ferrous Scrap Prices

Pittsburgh

No. 1 hvy. melting	$ 52.00 to	$ 53.00
No. 2 hvy. melting	45.00 to	46.00
No. 1 dealer bundles	65.00 to	66.00
No. 1 factory bundles (auto)	60.00 to	61.00
No. 2 bundles	37.00 to	38.00
No. 1 busheling	59.00 to	60.00
Machine shop turn.	6.00 to	7.00
Shoveling turnings	20.00 to	21.00
Cast iron borings	18.00 to	19.00
Low phos. punchings plate	67.00 to	68.00
Heavy turnings	45.00 to	46.00
No. 1 RR hvy. melting	65.00 to	66.00
Rails 2 ft. and under	80.00 to	81.00
Scrap rails, random lgth	78.00 to	79.00
RR specialties	71.00 to	72.00
No. 1 machinery cast	64.00 to	65.00
Cupola cast	57.00 to	58.00
Heavy breakable cast	30.00 to	31.00
Stainless		
18-8 bundles and solids	490.00 to	500.00
18-8 turnings	390.00 to	400.00

Chicago

No. 1 hvy. melting	$ 46.00 to	$ 47.00
No. 2 hvy. melting	42.00 to	43.00
No. 1 dealer bundles	56.00 to	57.00
No. 1 factory bundles (auto)	59.00 to	60.00
No. 2 dealer bundles	38.00 to	39.00
No. 1 busheling	56.00 to	57.00
Shredder scrap	55.00 to	56.00
Machine shop turn.	14.00 to	15.00
Mixed bor. and turn.	15.00 to	16.00
Shoveling turnings	19.00 to	20.00
Cast iron borings	33.00 to	34.00
Low phos. forge crop	76.00 to	77.00
Low phos. punchings plate ¼ in. and heavier	79.00 to	80.00
Low phos. 2 ft. and under	74.00 to	75.00
No. 1 RR hvy. melting	48.00 to	49.00
Scrap rails, random lgth	49.00 to	50.00
Reroller rails	85.00 to	86.00
Rails, 2 ft. and under	76.00 to	77.00
RR couplers and knuckles	69.00 to	70.00
RR car axles	102.00 to	103.00
No. 1 machinery cast	103.00 to	104.00
Cupola cast	89.00 to	90.00
Stove plate	76.00 to	77.00
Steel car wheels	59.00 to	60.00
Stainless		
18-8 bundles and solids	440.00 to	450.00
18-8 turnings	340.00 to	350.00
430 bundles and solids	95.00 to	100.00
430 turnings	65.00 to	70.00

Philadelphia

No. 1 hvy. melting	$ 53.00 to	$ 56.00
No. 2 hvy. melting	48.00 to	51.00
No. 1 dealer bundles	65.00 to	68.00
No. 2 dealer bundles	38.00 to	41.00
No. 1 busheling	65.00 to	68.00
Shredder scrap	71.00 to	74.00
Machine shop turn.	18.00 to	21.00
Mixed bor. and turn.	18.00 to	21.00
Shoveling turnings	30.00 to	33.00
Clean cast chemical borings	40.00 to	43.00
Low phos. 5 ft. and under	60.00 to	63.00
Low phos. 2 ft. punchings	85.00 to	88.00
Electric furnace bundles	75.00 to	78.00
RR specialties	74.00 to	77.00
Rails, 2 ft. and under	89.00 to	92.00
Cupola cast	55.00 to	58.00
Heavy breakable cast	53.00 to	56.00
No. 1 machinery cast	97.00 to	100.00

Detroit

Broker buying prices per gross ton on cars:

No. 1 hvy. melting	$ 36.00 to	$ 37.00
No. 2 hvy. melting	34.00 to	35.00
No. 1 dealer bundles	41.00 to	42.00
No. 2 bundles	18.00 to	19.00
No. 1 busheling	40.00 to	41.00
Drop forge flashings	21.00 to	22.00
Machine shop turn.	14.00 to	15.00
Mixed borings and turn.	7.00 to	8.00
Shoveling turnings	14.00 to	15.00
Cast iron borings	5.00 to	6.00
Heavy breakable cast	24.00 to	25.00
Mixed cupola cast	40.00 to	41.00
Automobile cast	58.00 to	59.00
Stainless		
18-8 bundles and solids	395.00 to	405.00
18-8 turnings	285.00 to	295.00
430 bundles and solids	70.00 to	80.00

Youngstown

No. 1 hvy. melting	$ 45.00 to	$ 46.00
No. 2 hvy. melting	30.00 to	31.00
No. 1 dealer bundles	51.00 to	52.00
No. 2 dealer bundles	30.00 to	31.00
Machine shop turn.	2.00 to	3.00
Shoveling turnings	8.00 to	9.00
Low phos. plate	52.00 to	53.00
Electric furnace bundles	52.00 to	53.00
Galvanized bundles	42.00 to	43.00

Cleveland

No. 1 hvy. melting	$ 42.00 to	$ 43.00
No. 2 hvy. melting	24.00 to	25.00
No. 1 dealer bundles	46.00 to	47.00
No. 1 factory bundles	51.00 to	52.00
No. 2 bundles	22.00 to	23.00
No. 1 busheling	47.00 to	48.00
Machine shop turn.	2.00 to	3.00
Mixed bor. and turn.	2.00 to	3.00
Shoveling turnings	5.00 to	6.00
Cast iron borings	5.00 to	6.00
Cut structural & plates, 2 ft. and under	70.00 to	71.00
Low phos. punchings plate	70.00 to	71.00
Drop forge flashings	33.00 to	34.00
Foundry steel, 2 ft. & under	59.00 to	60.00
No. 1 RR hvy melting	63.00 to	64.00
Rails, 2 ft. and under	82.00 to	83.00
Rails, 18 in. and under	83.00 to	84.00
Steel axle turnings	69.00 to	70.00
Railroad cast	82.00 to	83.00
No. 1 machinery cast	82.00 to	83.00
Cupola cast	82.00 to	83.00
Stove plate	57.00 to	58.00
Stainless		
18-8 bundles	375.00 to	385.00
18-8 turnings	295.00 to	305.00
430 bundles	75.00 to	85.00

Buffalo

No. 1 hvy. melting	$ 25.00 to	$ 26.00
No. 2 hvy. melting	15.00 to	16.00
No. 1 busheling	30.00 to	31.00
No. 1 dealer bundles	28.00 to	29.00
No. 2 bundles	12.00 to	13.00
Machine shop turn.	1.00 to	2.00
Mixed bor. and turn.	8.00 to	9.00
Shoveling turnings	10.00 to	11.00
Cast iron borings	8.00 to	9.00
Low phos. plate	48.00 to	49.00
Structural and plate, 2 ft. and under	46.00 to	47.00
Rails, 2 ft. and under	42.00 to	43.00
Scrap rails, random lgth	22.00 to	23.00
No. 1 machinery cast	63.00 to	64.00
No. 1 cupola cast	42.00 to	43.00

St. Louis

No. 1 hvy. melting	$ 47.00 to	$ 48.00
No. 2 hvy. melting	39.00 to	40.00
Foundry steel, 2 ft.	39.00 to	40.00
No. 1 dealer bundles	47.00 to	48.00
No. 2 bundles	36.00 to	37.00
Machine shop turn.	12.00 to	13.00
Shoveling turnings	18.00 to	19.00
Cast iron borings	30.00 to	31.00
No. 1 RR hvy. melting	47.00 to	48.00
Rails, random length	49.00 to	50.00
Rails, 18 in. and under	64.00 to	65.00
RR specialties	80.00 to	81.00
Cupola cast	70.00 to	71.00
Heavy breakable cast	48.00 to	49.00
Stove plate	70.00 to	71.00
Cast iron car wheels	49.00 to	50.00
Rerolling rails	84.00 to	85.00
Unstripped motor blocks	55.00 to	56.00

Birmingham

No. 1 heavy melting	$ 56.00 to	$ 57.00
No. 2 heavy melting	53.00 to	54.00
No. 1 dealer bundles	56.00 to	57.00
No. 2 bundles	43.00 to	44.00
No. 1 busheling	53.00 to	54.00
Shredder scrap	72.00 to	73.00
Machine shop. turn.	20.00 to	21.00
Shoveling turnings	25.00 to	26.00
Cast iron borings	26.00 to	27.00
Electric furnace bundles	52.00 to	53.00
Elec. furnace, 3 ft. & under	52.00 to	53.00
Structural and plate, 2 ft.	71.00 to	72.00
Structural and plate, 4 ft.	65.00 to	66.00
No. 1 RR hvy. melting	54.00 to	55.00
Scrap rails, random lgth	59.00 to	60.00
Rails, 18 in. and under	74.00 to	75.00
Angles and splice bars	65.00 to	66.00
No. 1 cupola cast	76.00 to	77.00
Unstripped motor blocks	55.00 to	56.00

Cincinnati

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 27.00 to	$ 28.00
No. 2 hvy. melting	26.00 to	27.00
No. 1 dealer bundles	28.00 to	29.00
No. 2 bundles	14.00 to	15.00
Machine shop turn.	1.00 to	2.00
Shoveling turnings	3.00 to	4.00
Cast iron borings	4.00 to	5.00
Low phos. 18 in. and under	52.00 to	53.00
Rails, random length	34.00 to	35.00
Rails, 2 ft. and under	59.00 to	60.00
No. 1 cupola cast	44.00 to	45.00
Heavy breakable cast	20.00 to	21.00
Drop broken cast	59.00 to	60.00

New York

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 26.00 to	$ 27.00
No. 2 hvy. melting	22.00 to	24.00
No. 2 dealer bundles	22.00 to	23.00
Mixed bor. and turn.	7.00 to	8.00
Machine shop turn.	4.00 to	5.00
Shoveling turnings	10.00 to	12.00
Clean cast. chem. borings	34.00 to	35.00
No. 1 machinery cast	89.00 to	90.00
Mixed yard cast	38.00 to	39.00
Heavy breakable cast	14.00 to	15.00
Stainless		
18-8 prepared solids	400.00 to	425.00
18-8 turnings	350.00 to	375.00
430 prepared solids	90.00 to	100.00
410 solids	80.00 to	90.00

Boston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 28.00 to	$ 30.00
No. 2 hvy. melting	20.00 to	22.00
No. 1 dealer bundles	28.00 to	30.00
No. 2 bundles	16.00 to	18.00
No. 1 busheling	28.00 to	30.00
Shredder scrap	38.00 to	40.00
Machine shop turn.	1.00 to	2.00
Shoveling turnings	1.00 to	2.00
No. 1 machinery cast	100.00 to	105.00
Mixed cupola cast	23.00 to	25.00
Heavy breakable cast	4.00 to	6.00

San Francisco

No. 1 hvy. melting	$ 39.00 to	$ 41.00
No. 2 hvy. melting	31.00 to	33.00
No. 1 dealer bundles	26.00 to	28.00
No. 2 dealer bundles	11.00 to	13.00
Machine shop turn.	4.00 to	6.00
Cast iron borings	4.00 to	6.00
No. 1 cupola cast	83.00 to	85.00

Los Angeles

No. 1 hvy. melting	$ 38.00 to	$ 40.00
No. 2 hvy. melting	27.00 to	29.00
No. 1 dealer bundles	25.00 to	27.00
No. 2 dealer bundles	8.00 to	10.00
Machine shop turn.	4.00 to	6.00
Shoveling turnings	8.00 to	10.00
Cast iron borings	4.00 to	6.00
Elec. furnace, 1 ft. and under (foundry)	84.00 to	86.00
No. 1 cupola cast	86.00 to	88.00

Seattle

No. 1 hvy. melting	$ 53.00 to	$ 55.00
No. 2 hvy. melting	42.00 to	44.00
No. 2 bundles	32.00 to	34.00
No. 1 cupola cast	88.00 to	90.00
Mixed yard cast	78.00 to	80.00

Hamilton, Ont.

Brokers buying price per net ton on cars:

No. 1 heavy melting	$ 33.00
No. 2 heavy melting cut 2 ft. and under	30.00
No. 1 dealer bundles	40.00
No. 2 bundles	5.00
Mixed steel scrap	17.00
Bush. new fact. prep'd.	38.00
Bush. new fact. unprp'd.	30.00
Machine shop turn.	18.00
Short steel turn.	21.00
Mixed bor. and turn.	10.00
Cast scrap	30.00

Houston

Brokers buying prices per gross ton on cars:

No. 1 hvy. melting	$ 55.00 to	$ 56.00
No. 2 hvy. melting	43.00 to	44.00
No. 2 bundles	28.00 to	30.00
Machine shop turn.	8.00 to	9.00
Crushed turnings	22.00 to	24.00
Shredder scrap	55.00 to	56.00
Cut structural plate 2 ft. and under	77.00 to	78.00
Unstripped motor blocks	55.00 to	57.00
Cupola cast	64.00 to	66.00